
(12) AUSTRALIAN PATENT ABRIDGMENT

(19) AU

(11) AU-A-43390/79

(54) RIVETTED JOINT CONSTRUCTION

(71) GIRLOCK LIMITED

(21) 43390/79

529170

(22) 6.4.78

(23) 15.1.79

(24) 6.4.78

(43) 18.10.79

(44) 26.5.83

(51)²

F16B 19/04
F16B 13/14

F16B 17/00
F16B 37/06

B21K 25/00

B21J 15/00

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(74) RI

(56) 59825/69

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71.6

78.1

73.2

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70.6

73.2

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74.5

(57) Claim 1. A joint construction joining a rod-like member requiring restraint against torsional loading, and a plate-like member, the plate-like member having in it a non-circular opening, the rod-like member the cross-sectional shape of which is non-complementary with that of the opening, having at one side of and abutting against one surface of the plate-like member a flange the dimensions of which are such that it will not pass through said opening, the rod-like member having a substantial degree of extension in at least one direction from the plate-like member and having adjacent the other surface of said plate-like member a portion deformed by swaging so that a part thereof lies within those parts of the opening not filled by the rod-like member to prevent relative rotation of the rod-like member in relation to the plate member about its axis and so that the remainder of said portion overlies the other surface of the plate-like member to act with the first mentioned flange to prevent relative movement in an axial direction of the rod-like member in relation to the plate-like member.

RECEIVED
6/4/78
PDB920
Declaration
Specification 372
Drawings 1

529170

4339079

COMMONWEALTH OF AUSTRALIA

Patents Act 1952-

~~CONVENTION~~

APPLICATION FOR A PATENT

LOGGE
-6 APR 1978
PAID



I We ~~GIRLOCK LIMITED~~, a company incorporated under the laws of the State of New South Wales of 36 Harp Street, Belmore, New South Wales, Commonwealth of Australia

hereby apply for the grant of a Patent for an invention entitled

"JOINT CONSTRUCTION"

APPLICATION ACCEPTED AND ~~AMENDED~~
ALLOWED 11/3/83

which is described in the accompanying ~~provisional~~ ~~specification~~ specification.

COMPLETE AFTER PROVISIONAL SPECIFICATION No 4339079

~~This application is made under the provisions of the Patents Act 1952 and the Patents Regulations 1952 and is a complete specification for an invention for which protection is sought.~~

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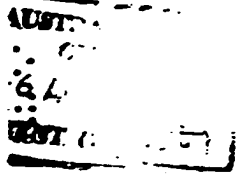
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13 APR 1978

Our address for service is: F. B. Rice & Co., 101 Mort St., Balmain, NSW 2041

Dated this 6th Jay of April 19 78



GIRLOCK LIMITED

by

[Handwritten signature]

Patent Attorney

F. B. RICE & CO.,
Patent Attorneys,
Sydney.

To: The Commissioner of Patents,
Commonwealth of Australia.

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DECLARATION IN SUPPORT OF
AN APPLICATION
A CONVENTION APPLICATION FOR A
PATENT OR PATENT OF ADDITION

In support of the Application
~~Convention Application~~ made by

GIRLOCK LIMITED

43390/79

for a patent
~~patent of addition~~ for an invention entitled
"Joint Construction"

I, ~~Mr~~ Michael Cooper, Secretary of and care of the applicant
company
do solemnly and sincerely declare as follows:

(1) I am ~~the~~ applicant ~~xxxxxxx for the~~ patent
~~xxxxxxx of addition~~

(1) I am authorised by Girlock Limited

the applicant for the patent
~~xxxxxxx of addition~~ to make this declaration

on its behalf.

(2) The ~~basic application~~ ~~xxxxxxx defined by Section~~ 142 ~~of the Act~~ xxxxxxx
~~made~~ ~~in~~ ~~the~~ ~~xxxxxxx~~

by

(3) MR. BARRIE VIALS
14 CECIL STREET, DOLANS BAY. NSW. 2229.

is the actual inventor of the invention and the facts upon
which the applicant company
is ~~entitled~~ entitled to make the application are as follows:

The applicant is a person who would, if a patent were
granted upon an application made by the actual inventor
be entitled to have the patent assigned to it, under the
provisions of Section 34(1)(fa) of the act.
The basic application referred to in paragraph 2 of this Declaration
is/are the first application made in a Convention country in respect of
the invention the subject of the application.

Declared at Sydney 1 this 13 day of December 1978

Michael H. Cooper
SECRETARY

F. B. RICE & CO.,

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COMMONWEALTH OF AUSTRALIA
Patents Act 1952

LODGE

AUSTRALIA

15 JAN 1979

PATENT

PATENT OFFICE

FORTY DOLLARS

ICE

COMPLETE SPECIFICATION

(ORIGINAL)

43390/79

Class

Int. Class

Application Number : PD3926/78
Lodged : 6TH APRIL, 1978

Complete Specification Lodged :
Accepted :
Published :

This document contains the
amendments made under
Section 49.

and is correct for printing.

Priorit :

Related Art :

AUS

15 JAN 1979

PATENT OFFICE

40
15

Name of Applicant : GIRLOCK LIMITED

Address of Applicant : 36 Harp Street, Belmore, New South Wales,
Commonwealth of Australia

Actual Inventor : BARRIE EDWARD VIALS

Address for Service : F.B. RICE & CO.,
Patent Attorneys,
The Forth and Clyde,
101 Mort Street,
BALMAIN. 2041.

Complete Specification for the invention entitled:

"JOINT CONSTRUCTION"

The following statement is a full description of this invention
including the best method of performing it known to us :-

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This invention relates to a joint construction by means of which a rod-like member may be secured to a plate-like member in such a manner that it will both withstand torsional movement tending to twist it in relation to the plate-like member and axial forces tending to move it axially in relation to the plate-like member.

The invention consists in a joint construction joining a rod-like member requiring restraint against torsional loading, and a plate-like member, the plate-like member having in it a non-circular opening, the rod-like member, the cross-sectional shape of which is non-complementary with that of the opening, having at one side of and abutting against one surface of the plate-like member a flange the dimensions of which are such that it will not pass through said opening, the rod-like member having a substantial degree of extension in at least one direction from the plate-like member and having adjacent the other surface of said plate-like member a portion deformed by swaging so that a part thereof lies within those parts of the opening not filled by the rod-like member to prevent relative rotation of the rod-like member in relation to the plate-like member about its axis and so that the remainder of said portion overlies the other surface of the plate-like member to act with the first mentioned flange to prevent relative movement in an axial direction of the rod-like member in relation to the plate-like member.

In order that the nature of the invention may be better understood a preferred form thereof is described with reference to and as illustrated in the accompanying drawings in which:-

Figures 1a and b respectively show the two parts before assembly, the rod-like member and the plate-like member.

Figures 2a and b show sectional views of the swaging tool, the sections corresponding to the major and minor diameter of the oval hole respectively, and

Figures 3a and b and 4a and b each show sections through

the major and minor diameters of the oval hole, before and after swaging respectively.

Referring to Figure 1a the rod-like member 10 is provided with flange 11 and enlarged portion 12. The flange 11 is shown in Figure 3 as lying underneath a plate 13 having in it a hole 14 which, as shown in Figure 1b is oval in plan. The enlarged portion of the rod-like member fits closely within hole 14 across its minor diameter (Fig. 3b) but has clearance across its major diameter (Fig. 3a).

To make the joint the parts are assembled as shown in Figures 3a and b and supported. The swaging tool 15, shown in two sections in Figures 2a and b, is then applied to swage the enlarged part 12 to the form shown in section, in Figures 4a and b. The effect of this is to fill the opening 14 with metal from the part 12. Owing to the non-circular nature of the opening 14 this effectively prevents rotation of the rod-like member 10 about its axis in relation to the plate 13. As seen in Figure 4b however, a portion of material from the part 12 is caused to overlap the plate 13 and acts with the flange 11 to prevent any axial movement of the rod-like member 10 in relation to the plate 13.

A joint construction according to the invention may be applied easily and economically in many situations in which two parts having the characteristics described above are required to be joined under the conditions described.



The claims defining the invention are as follows:-

1. A joint construction joining a rod-like member requiring restraint against torsional loading, and a plate-like member, the plate-like member having in it a non-circular opening,
5 the rod-like member, the cross-sectional shape of which is non-complementary with that of the opening, having at one side of and abutting against one surface of the plate-like member a flange the dimensions of which are such that it will not pass through said opening, the rod-like member having a
10 substantial degree of extension in at least one direction from the plate-like member and having adjacent the other surface of said plate-like member a portion deformed by swaging so that a part thereof lies within those parts of the opening not filled by the rod-like member to prevent relative
15 rotation of the rod-like member in relation to the plate-like member about its axis and so that the remainder of said portion overlies the other surface of the plate-like member to act with the first mentioned flange to prevent relative movement in an axial direction of the rod-like member in
20 relation to the plate-like member.
2. A joint construction as claimed in Claim 1 wherein the said opening is oval.
3. A joint construction substantially as described with reference to and as illustrated in the accompanying drawing.

DATED this 28th day of February, 1983.

GIRLOCK PTY. LIMITED
Patent Attorneys for the
Applicant:

F.B. RICE & CO.



FIG. 1a

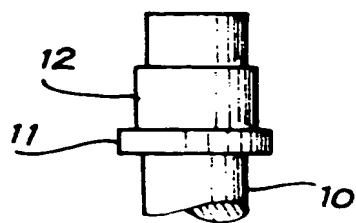


FIG. 1b

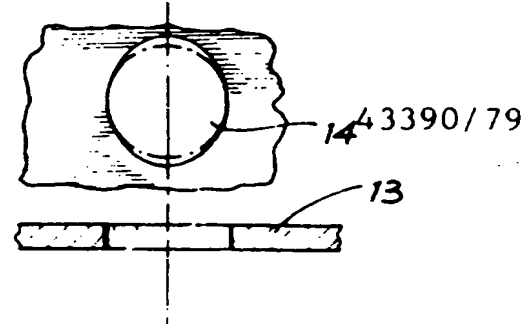


FIG. 2a

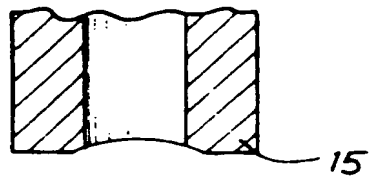


FIG. 2b

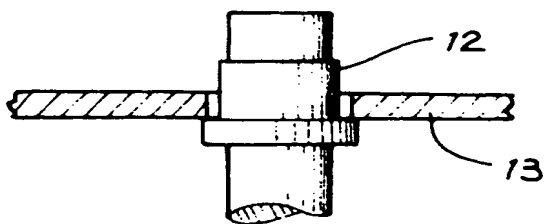
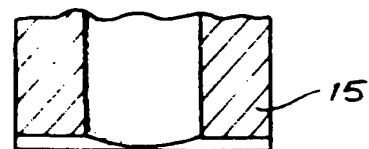


FIG. 3a

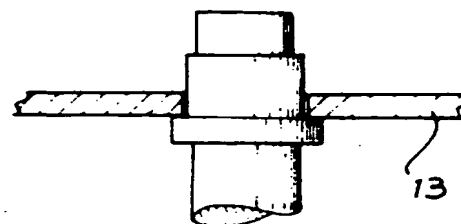


FIG. 3b

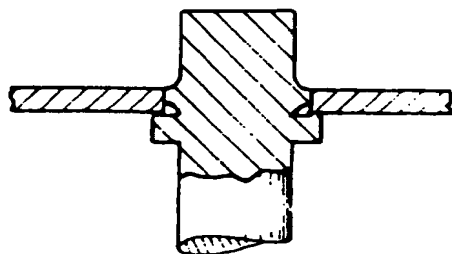


FIG. 4a

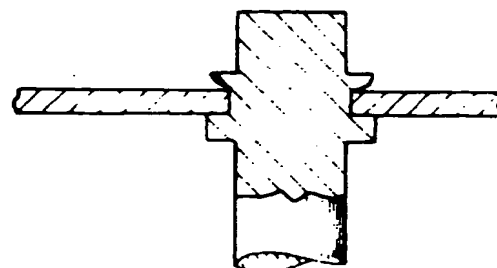


FIG. 4b